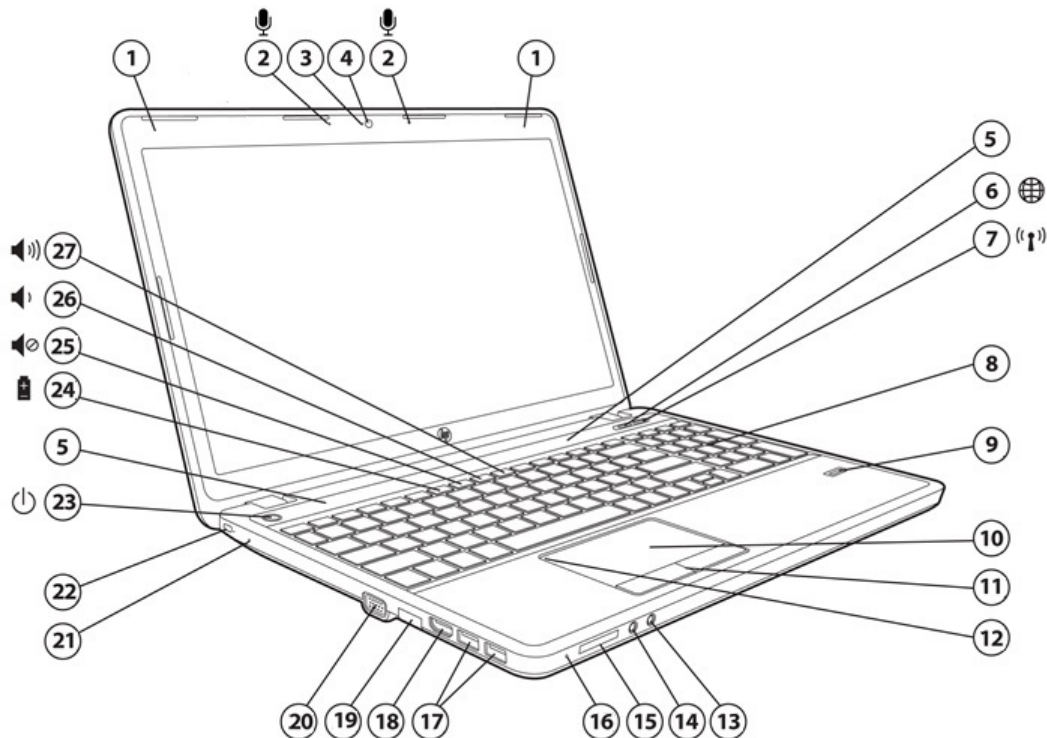


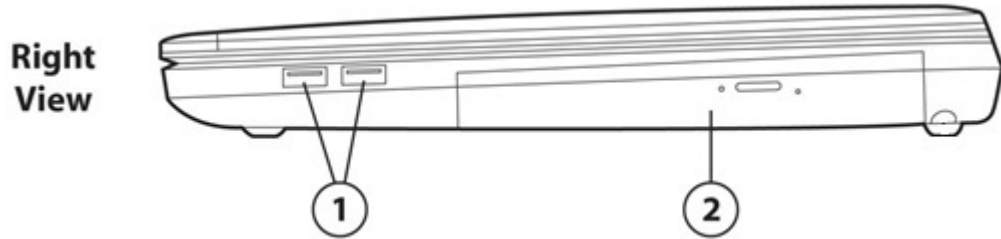
Overview



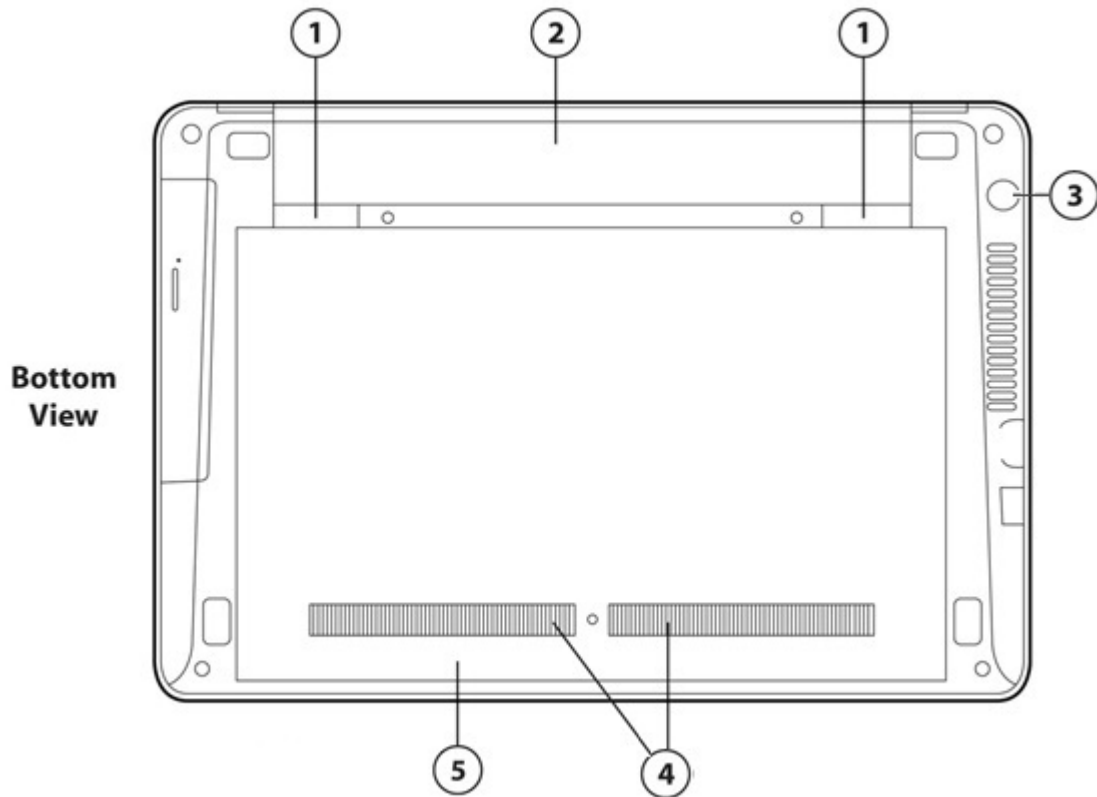
- | | |
|------------------------------------------------|---------------------------------------|
| 1. WLAN antennas | 15. Media Card Reader |
| 2. Dual-microphone array* | 16. Hard drive activity LED indicator |
| 3. Webcam LED indicator (with optional webcam) | 17. 2 USB 3.0 ports |
| 4. Optional 720p HD webcam | 18. HDMI 1.4a port |
| 5. Stereo speakers | 19. RJ-45/Ethernet port |
| 6. HP WebBrowser button with LED indicator | 20. VGA/external monitor connector |
| 7. Wireless on/off button with LED indicator | 21. AC Adapter/battery light |
| 8. Numeric keypad | 22. Security cable slot |
| 9. Optional HP Fingerprint Sensor | 23. Power button with LED indicator |
| 10. Touchpad | 24. HP Power Assistant function key |
| 11. Touchpad pick buttons | 25. Volume mute function key |
| 12. Touchpad on/off button with LED indicator | 26. Volume down function key |
| 13. Stereo microphone in | 27. Volume up function key |
| 14. Stereo headphone/line out | |

* Models without optional webcam have single integrated microphone on left side of display panel.

Overview



- 1. 2 USB 2.0 ports
- 2. Optical drive (select models)



- 1. Battery and service door release latches
- 2. Battery bay
- 3. Power connector
- 4. Vents
- 5. Hard drive bay (inside the service door)

Overview

At A Glance

- Windows 8 versions, Windows 7 versions, SUSE Linux Enterprise Desktop 11, or FreeDOS
- Thin, lightweight design with metallic gray brushed aluminum finish for durability and style; wear-resistant HP DuraFinish
- Full-sized spill-resistant keyboard; full separate numeric keypad
- HP 3D DriveGuard to protect hard drive against impact, bumps or drops
- Larger Touchpad with gestures support, on/off button with LED indicator
- Enhanced security features including HP ProtectTools (Win7 only), HP Client Security (Win8 only), HP Face Recognition, optional HP Fingerprint Sensor
- SRS Premium Sound optimized for high fidelity audio
- HDMI port for connecting to high-resolution displays
- ArcSoft TotalMedia Suite (Win7 only) for playing, creating, and editing video and audio files
- Cyberlink Media Suite (Win8 only) for playing, creating, and editing video and audio files.
- Optional HD webcam with dual-microphone array for video conferencing
- Widescreen LED-backlit HD display with 16:9 aspect ratio
- 15.6-inch diagonal HD anti-glare, BrightView optional
- Accelerated Processing Unit and graphics powered by VISION Pro Technology from AMD
- Models with integrated graphics
- Models with discrete graphics
- AMD Radeon™ Dual Graphics to automatically manage how the graphics processor in the AMD APU and the AMD Radeon™ discrete graphics processor are used
- HP WebBrowser for convenient online access without the standard boot-up time
- Flexible wireless connectivity options:
 - Integrated 802.11 b/g/n wireless LAN module
 - Integrated 802.11 b/g/n with Bluetooth 4.0 High Speed (HS) combo card*
- HP Power Assistant (Win7 only) to conserve power, increase battery run-time, monitor power needs, report workforce power consumption
- Low Halogen**, ENERGY STAR qualified and EPEAT Gold registered in the U.S. EPEAT status varies by country- please see epeat.net.

* Available only on select models.

** Meeting the industry definition of 'Low Halogen' per the iNEMI Position Statement on "Low Halogen" Electronics. Plastic parts incorporated into the chassis generally contain < 1000 ppm (0.1%) of bromine or chlorine. Printed circuit board and substrate laminates generally contain < 1500 ppm (0.15%) of total bromine and chlorine. Service parts after purchase may not be Low Halogen. External accessories, including power supplies, power cords, and peripherals as well as the following customer-configurable internal components: ATT SIM card are not Low Halogen.

Features

OPERATING SYSTEM

Preinstalled	Windows 8 Pro 64*
	Windows 7 Professional (available through downgrade rights from Windows 8 Pro)**
	Windows 8 64*
	Windows 7 Professional 64***
	Windows 7 Home Premium 64***
	Windows 7 Home Basic 64***
Supported	SUSE Linux Enterprise Desktop 11
	FreeDOS
	Windows 8 Pro 32*
	Windows 8 32*
	Windows 8 Enterprise 32*
	Windows 8 Enterprise 64*
	Windows 7 Professional 32***
	Windows 7 Home Premium 32***
Certified	Windows 7 Home Basic 32***
	Windows XP Professional 32
	Microsoft WHQL
	SUSE Linux

* Not all features are available in all editions of Windows 8. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8 functionality. See <http://www.microsoft.com> for details.

** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

*** Not all features are available in all editions of Windows 7. This system may require upgraded and/or separately purchased hardware to take full advantage of Windows 7 functionality. See <http://www.microsoft.com/windows/windows-7/> for details.

ACCELERATED PROCESSING UNIT*

AMD Quad-Core A8-4500M APU with Radeon™ HD 7640G Graphics (2.8 GHz/1.9 GHz, 4 MB L2 cache, 4 cores)
AMD Dual-Core A6-4400M APU with Radeon™ HD 7520G Graphics (3.2 GHz/2.7 GHz, 1 MB L2 cache, 2 cores)
AMD Dual-Core A4-4300M APU with Radeon™ HD 7420G Graphics (3.0 GHz/2.5 GHz, 1 MB L2 cache, 2 cores)

* This system requires a separately purchased 64-bit operating system and 64-bit software products to take advantage of the 64-bit processing capabilities of AMD technology. Multi-core processing with AMD technology is designed to improve performance of this system. Given the wide range of SW applications available, performance will vary. AMD's numbering is not a measurement of clock speed.

NOTE: APU speed denotes maximum performance mode; APUs will run at lower speeds in battery optimization mode.

AMD CONTROLLER HUB (CHIPSET)

AMD A70M CH

Features

GRAPHICS INCLUDED WITH ACCELERATED PROCESSING UNIT (APU)

Integrated graphics

AMD Radeon™ HD 7640G Graphics (with AMD Quad-Core A8-4500M APU)

AMD Radeon™ HD 7520G Graphics (with AMD Dual-Core A6-4400M APU)

AMD Radeon™ HD 7420G Graphics (with AMD Dual-Core A4-4300M APU)

Switchable graphics:

AMD Radeon HD 7650G and HD 7650M Graphics with 1GB DDR3

AMD Radeon HD 7650G and HD 7650M Graphics with 2GB DDR3

Dual graphics:

AMD Dual-Core A8-4500M (2.8GHz/1.9GHz, 4 MB L2 Cache) APU with AMD Radeon HD 7650G and HD 7650M Graphics

AMD Dual-Core A6-4400M (3.2GHz/2.7GHz, 1 MB L2 Cache) APU with AMD Radeon HD 7520G and HD 7650M Graphics

DISPLAY

Internal

15.6" diagonal LED-backlit HD anti-glare (1366 x 768 resolution)

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 2048 x 1536 external resolution @75 Hz

HDMI

1.4 port supports up to 1080p, 1920 x 1080 at 60Hz

NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

STORAGE AND DRIVES

Primary Storage Bay

Hard Drives

320/500/750 GB 7200 rpm SMART SATA II

320/500/640/750 GB 5400 rpm SMART SATA II

3D DriveGuard (Windows only)

The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive

NOTE: For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8) of system disk is reserved for the system recovery software.

OPTICAL DRIVES

Fixed 12.7 mm SATA optical drive

Blu-ray ROM DVD+/-RW SuperMulti DL Drive

DVD+/-RW SuperMulti DL Drive

Weight saver

Features

MEMORY

Standard

DDR3 PC3-10600 SDRAM (1600 MHz)

Two SODIMM slots supporting dual-channel memory

1 GB, 2 GB, and 4 GB SODIMMs

Maximum

Upgradeable to 8192 MB with optional 4096 MB SODIMMs in slots 1 and 2

Dual-channel

Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. With Windows Starter 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

NETWORKING/COMMUNICATIONS

Wireless

Support for a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards.. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless.

All 802.11 integrated wireless LAN options

Ralink 802.11 b/g/n (1x1)

Atheros 802.11b/g/n (2x2) with Bluetooth® v4.0 combo

Broadcom 802.11b/g/n (1x1) with Bluetooth® v4.0 combo

Ralink 802.11 b/g/n (1x1) with Bluetooth® v4.0 combo

Communications

Integrated Realtek 10/100/1000 Ethernet Controller*

* The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

** Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

Features

AUDIO/MULTIMEDIA

Audio

SRS Premium Sound™

Integrated stereo speakers

Integrated microphone (dual-microphone array when equipped with optional webcam)

Function keys for volume mute, volume up, volume down; play, rewind, and fast-forward of video and audio files

Stereo headphone/line out

Webcam

Optional 720p HD webcam

- HD format (widescreen)
- Supports videoconferencing and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing
- Improved low light sensitivity
- Improved dynamic range

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available. The HP ProBook 4545s includes a separate numeric keypad.

Pointing Devices

Touchpad with gestures support, on/off button with LED indicator, two-way scroll, two pick buttons

Buttons and Function Keys

Separate launch buttons provide easy access to wireless on/off and HP WebBrowser. Function keys provide control of features including: standby mode, display brightness, external display, HP Power Assistant, volume mute, volume down, volume up, and media control.

Features

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

Cyberlink Media Suite (Windows 8 only)
HP Recovery Manager
HP Support Assistant
HP Hotkey Support
HP WebBrowser
HP Peak Power Manager (web only)*
HP Wireless Hotspot (Windows 8 and web only)
HP Power Assistant (Windows 7 only)
HP Connection Manager (Windows 7 only)
ArcSoft Total Media Suite (Windows 7 only)
Buy Office
Skype ready**
WinZip (Windows 7 only)

NOTE: HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 19 GB of the hard drive is reserved for the system recovery software. Support in Windows Operating System only.

* HP Peak Power Manager replaces HP Power Assistant for both Win7 and Win8. HP Peak Power Manager will be available on the web for download for existing product owners.

**Skype-ready. Skype is not offered in China.

Security

Standard

HP ProtectTools (Windows 7 only)
HP Client Security (Win8 only)
Microsoft Defender
Drive Encryption for HP ProtectTools (will be web-only ready at Win8 GA date)
Credential Manager
HP Security Manager
HP Spare Key
Device Access Manager w/ JITA
One Step Logon
File Sanitizer for HP ProtectTools (Windows 7 only)
Enhanced Pre-Boot Security
HP Face Recognition
Security Lock slot

Optional

Security Lock
HP Fingerprint Sensor

NOTE: Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging from one to five years. Service is limited, check with Absolute for availability outside the U.S.

For more information on HP security solutions refer to: <http://www.hp.com/go/security>.

Features

POWER

Power Supply

External 90-watt Smart AC adapter (discrete graphics)
External 65-watt Smart AC adapter (integrated graphics)
Power cord included is 6-foot (1.8 meter).
Total length including external AC adapter is 12 feet (3.66 meter).
HP Fast Charge (6-Cell only)

Primary Battery

HP 9-cell Lithium-Ion Battery (93 WHr)
HP 6-cell Lithium-Ion Battery (47 WHr)

Battery Life*

	Configurations with integrated graphics	Configurations with discrete graphics
9-cell (93 WHr) battery	Up to 13 hours 30 minutes	Up to 13 hours 30 minutes
6-cell (47 WHr) battery	Up to 7 hours 15 minutes	Up to 7 hours

System Standby Time

Up to 1 week

*Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark <http://www.bapco.com/products/mobilemark2007> for additional details.

NOTE: Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. Please note that Fast Charge is only available on 6-cell batteries.

Power Conservation

Supports enhanced Intel SpeedStep technology (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)
ATI PowerPlay technology
Hibernation
Standby
ACPI compliance

ENVIRONMENTAL

ENERGY STAR
IT ECO Declaration
EPEAT Gold where HP registers commercial notebook products. See <http://www.epeat.net> for registration status in your country.

NOTE: This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks.

Features

WEIGHTS & DIMENSIONS

Weight

Starting at 5.14 lb (2.33 kg) without optical drive

Starting at 5.45 lb (2.47 kg) with optical drive

Dimensions (w x d x h)

14.76 x 10.09 x 1.4 in (at front)

37.5 x 25.6 x 3.5 cm (at front)

NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, hard drive, 1 GB memory, and optical drive. Weight varies by configuration and components.

PORTS/SLOTS

Ports

VGA - One

USB 3.0- Two

USB 2.0 - Two

HDMI 1.4a - One

Stereo microphone in - One

Stereo headphone/line out - One

Power Connector - One

RJ-45 (Ethernet) - One

Digital Media Slots

1 Multi-media Reader Slot supporting SD, SDHC, SDXC, Memory Stick

SERVICE AND SUPPORT

HP Services offers limited 3-year, 1-year and 90-day warranty options depending on country. Warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: <http://www.hp.com/hps/carepack>.

NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.
<http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>
<http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V
	Average Operating Power	Integrated graphics: TBD W Discrete graphics: TBD W
	Max Operating Power	< 90 W or < 65W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Select models*
	EPEAT	Registered TBD in United States**
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
	UKRSERTCOMPUTER	Yes

Technical Specifications

* Configurations of the HP ProBook 4545s that are ENERGY STAR qualified are identified as HP ProBook 4545 ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT registration varies by country. See www.epeat.net for registration status by country. EPEAT status listed above applies to U.S.

For accessibility information on HP products, please visit: <http://www.hp.com/accessibility>.

DISPLAY

15.6-inch LED HD (1366 x 768) anti-glare	Dimensions (W x H)	13.54 x 7.59 in (34.4 x 19.4 cm)	
	Diagonal Size	15.6 in (39.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	400:1 (min)	
	Refresh Rate	60 Hz	
	Brightness	210 nit (typical)	
	Pixel Resolution	Pitch	0.252 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	101 ppi	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

STORAGE AND DRIVES

Internal Storage

Technical Specifications

750 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)
	Capacity	750 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track 1.5 ms
		Average 11 ms
		Maximum 22 ms
	Rotational Speed	7200 rpm
	Logical Blocks	1,465,149,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

500 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)
	Capacity	500 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track 1.5 ms
		Average 11 ms
		Maximum 22 ms
	Rotational Speed	7200 rpm
	Logical Blocks	976,773,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

Technical Specifications

320 GB 7200 rpm SATA Hard Drive

Drive Weight	0.25 lbs (115 g)	
Capacity	320 GB	
Height	0.37 in (9.5 mm)	
Width	2.75 in (70 mm)	
Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
Transfer Rate	Synchronous (maximum)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	1.5 ms
	Average	11 ms
	Maximum	22 ms
Rotational Speed	7200 rpm	
Logical Blocks	625,142,448	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

750 GB 5400 rpm SATA Hard Drive

Drive Weight	0.27 lb (125 g) or 0.22 lb (101 g)	
Capacity	750 GB	
Height	0.50 in (12.7 mm) or 0.37 in (9.5 mm)	
Width	2.75 in (70 mm)	
Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
Transfer Rate	Synchronous (maximum)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	3 ms
	Average	13 ms
	Maximum	24 ms
Rotational Speed	5400 rpm	
Logical Blocks	1,465,149,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

Technical Specifications

640 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)
	Capacity	640 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track 3 ms
		Average 13 ms
		Maximum 24 ms
	Rotational Speed	5400 rpm
	Logical Blocks	1,250,263,728
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

500 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)
	Capacity	500 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track 3 ms
		Average 13 ms
		Maximum 24 ms
	Rotational Speed	5400 rpm
	Logical Blocks	976,773,168
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

Technical Specifications

320 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)
	Capacity	320 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous (maximum) 300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track 3 ms
		Average 13 ms
		Maximum 24 ms
	Rotational Speed	5400 rpm
	Logical Blocks	625,142,448
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

Optical Drives

DVD+/-RW SuperMulti DL Drive	Access Times	Random	<140ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM	
		8X DVD	
		24X CD-R	
		24X CD-RW	
		8X DVD+R	
		8X DVD+RW	
		8X DVD-R	
		6X DVD-RW	
		6X - DVD+R Dual Layer	
		6X - DVD-R Dual Layer	
		5X DVD-RAM	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

Technical Specifications

Blu-ray ROM DVD+/-RW SuperMulti DL Drive	Access Times	Random	<190 ms CD-ROM (typical) < 180ms DVD-ROM (typical) <230 ms BD-ROM (typical)
	Max Data Transfer Rate	24X CD-ROM 8X DVD-ROM 24X CD-R 16X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 4X - DVD+R Dual Layer 4X - DVD-R Dual Layer 5X DVD-RAM 6X BD-ROM	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, , CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW. DVD-RAM, BD-ROM, BD-R, BD-RE	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R DL, DVD+RW, DVD-R, DVD-R DL, DVD-RW, DVD-RAM	
	Max Media Capacity (read)	50.0 GB	
	Max Media Capacity (write)	8.5GB	
	Transport	Tray Loading	

SECURITY

Technical Specifications

HP Fingerprint Sensor (optional)	Mobile Voltage Operation	3.0V-3.6V Single Supply
	Operating Temperature	32° - 158°F (0° - 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images

NETWORKING/COMMUNICATIONS

Integrated Realtek RTL8151FH-CG 10/100/1000 NIC	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	Power Management Support	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	Interface	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ
	NIC Device Driver Name	Realtek PCIe GBE Ethernet Family Controller

Atheros AR9485 802.11 b/g/n WiFi Adapter (1x1)	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g IEEE 802.11n

Technical Specifications

Interoperability	Wi-Fi certified
Frequency Band	2.4 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: many possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output²	13.5 dBm, nominal
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Associated to Access Point, Idle: 250 mW nominal Wireless Button Off: 100 mW nominal Radio disabled: 75 mW nominal
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	72.2 Mbps: -70 dbm, 54 Mbps: -74 dBm, 11 Mbps: -88 dBm , 1 Mbps: -95 dBm
Antenna Connections	High efficiency antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard 1.2
Weight	0.013 lb (6 g)
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON

1. Check latest software/driver release for updates on supported security features.

2. Maximum output power may vary by country according to local regulations.

3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Technical Specifications

AUDIO/MULTIMEDIA

Hardware	Implementation	IDT 92HD87 High Definition CODEC
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array when equipped with optional webcam

Audio Output Quality	Frequency Response	20 Hz - 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz - 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit

Internal Stereo Speaker	Power Rating	2 Watts
	Impedance	4 ohms

POWER

Technical Specifications

HP 90W Smart AC Adapter	Dimensions	5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)
	Weight	0.82 lb (370 g)
	Input	100 to 240 VAC
		Input Efficiency 87% min at 115 VAC
	Output	Input frequency range 47 to 63 Hz
		Input AC current 1.5 A at 90 VAC, 0.75 A at 180 VAC PFC Version 2.4 A at 90 VAC, 1.2 A at 180 VAC NON PFC Version
		Output power 90W
	Connector	DC output 19.0V
		Hold-up time 5 msec at 115 VAC input
		Output current limit <11A, Over voltage protection- 29V max automatic shutdown
		Environmental Design
	EMI and Safety Certifications	Operating temperature 32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature -4° to 149° F (-20° to 65° C)
		Altitude 0 to 10,000 ft (0 to 3,048 m)
		Humidity 20% to 80%
		Storage Humidity 10% to 90%
		CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.

HP 65W Smart AC Adapter	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)
	Weight	0.62 lb (280 g)
	Input	100 to 240 VAC
		Input Efficiency 87% min at 115 VAC
	Output	Input frequency range 47 to 63 Hz
		Input AC current 1.7 A at 90 VAC, 0.85 A at 180 VAC
		Output power 65W
	Connector	DC output 18.5V
		Hold-up time 5 msec at 115 VAC input
		Output current limit <11A, Over voltage protection- 29V max automatic shutdown
		Environmental Design
	EMI and Safety Certifications	Operating temperature 32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature -4° to 149° F (-20° to 65° C)

Technical Specifications

EMI and Safety Certifications	Altitude	0 to 10,000 ft (0 to 3,048 m)
	Humidity	20% to 80%
	Storage Humidity	10% to 90%
	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.	

9-Cell (93 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 2.9 x 8.3 in (2.0 x 7.3 x 21.0 cm)
	Weight (max)	1.07 lb (0.488 kg)
	Cells/Type	9-cell Lithium-Ion
	Energy	Watt-hour capacity 93 WHr
	Temperature	Operating (Charging) 32° to 113° F (0° to 45° C)
		Operating (Discharging) 14° to 140° F (-10° to 60° C)
		Non-operating -4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF or Standby Mode 3 to 4 hours
		System ON 4 to 6 hours (depending on system power consumption)

6-Cell (47 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 1.8 x 10.4 in (2 x 4.5 x 26.5cm)
	Weight (max)	.70lb, (.312kg)
	Cells/Type	Lithium-Ion
	Energy	Voltage 10.8V
		Amp-hour capacity 4.4Ah
		Watt-hour capacity 47Wh
	Temperature	Operating (Charging) 32° to 113° F (0° to 45° C)
		Operating (Discharging) 14° to 122° F (-10° to 50° C)
		Non-operating -4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode 2.5 hours
		System ON 3 to 5 hours
	Fuel Gauge LED	No
	Warranty	1 year
	Compatible with optional Travel Battery	No

ENVIRONMENTAL

Technical Specifications

Environmental Data

Eco-Label Certifications This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

US Energy Star®
 IT ECO declaration
 EPEAT Gold where HP registers commercial desktop products. See <http://www.epeat.net> for registration status in your country US Federal Energy Management Program (FEMP)

System Configuration The configuration used for the Energy Consumption and Declared Noise Emissions data is based on a "Typically Configured Notebook"

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	6.95 W	7.57 W	7.1W
Sleep (Energy Star low power mode)	0.93 W	1.14W	0.88 W
Off	0.46 W	0.61 W	0.44W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	24 BTU/hr	26 BTU/hr	24 BTU/hr
Sleep	3 BTU/hr	4 BTU/hr	3 BTU/hr
Off	2 BTU/hr	2 BTU/hr	2 BTU/hr

***NOTE:** Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.2	29
Fixed Disk (random writes)	3.3	29

System fan is usually off except when charging the battery

Batteries This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:
 CR2032 (coin cell), Li-ion
 6-cell high capacity Lithium-Ion battery (optional 8 cell available)

Additional information This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

Technical Specifications

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0% post-consumer recycled plastic (by wt.)

This product is greater than 96.4% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Cardboard & misc 411 g
 - PAPER/Corrugated 51 g
- Internal:
 - PLASTIC/Polyethylene low density 25 g
 - PLASTIC/EPE-Expanded Polyethylene 60 g
 - PLASTIC/PET 3 g
 - OTHER/OTHER 20 g
- The PAPER/Cardboard & misc packaging material is made from 80% recycled content.
- The PAPER/Corrugated packaging material is made from 80% recycled content.
- The PLASTIC/Polyethylene low density packaging material is made from 65% recycled content.
- The PLASTIC/EPE-Expanded Polyethylene packaging material is made from 65% recycled content.
- The PLASTIC/PET packaging material is made from 65% recycled content.
- The OTHER/OTHER packaging material is made from 65% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.

Technical Specifications

- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

MATERIAL USAGE

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment (http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
 - Certain Azo Colorants
 - Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
 - Cadmium
 - Chlorinated Hydrocarbons
 - Chlorinated Paraffins
 - Formaldehyde
 - Halogenated Diphenyl Methanes
 - Lead carbonates and sulfates
 - Lead and Lead compounds
 - Mercuric Oxide Batteries
 - Ozone Depleting Substances
 - Polybrominated Biphenyls (PBBs)
 - Polybrominated Biphenyl Ethers (PBBEs)
 - Polybrominated Biphenyl Oxides (PBBOs)
 - Polychlorinated Biphenyl (PCB)
 - Polychlorinated Terphenyls (PCT)
 - Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
 - Radioactive Substances
 - Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
-
- Nickel finishes that release greater than 0.5 µgrams/cm²/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.

END-OF-LIFE MANAGEMENT AND RECYCLING

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

HEWLETT-PACKARD CORPORATE ENVIRONMENTAL INFORMATION

For more information about HP's commitment to the environment:

Global Citizenship Report <http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>
Environment website
<http://www.hp.com/environment>



Technical Specifications

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part #
Memory	HP 2 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P63AA#xxx
	HP 4 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P64AA#xxx
	NOTE: Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.	
Cases	HP Essential Top Load Case	H2W17AA
	HP Essential Backpack	H1D24AA
	HP Essential Messenger Case	H1D25AA
Docking	HP Dual Hinge Notebook Stand	AW661AA
	HP Display and Notebook Stand	AW662AA
	HP 3005pr USB 3.0 Port Replicator	H1L08AA
	HP 2005pr USB 2.0 Port Replicator	H1L07AA
Input/Output - Mice	HP Wireless Mobile Mouse	H2L63AA
	HP USB Essential Keyboard/Mouse	H2S75AA
Adapters	HP 90W Slim Adapter	BT796AA
	HP 90W Smart AC/Auto/Air Combo Adapter	ED493AA
Storage - External Storage	HP Mobile USB DVDRW	A2U57AA
Batteries	HP PR06 Notebook Battery	QK646AA
Health and Education	HP 20-Notebook Managed Charging Cart	QL489AA
	HP 20-Notebook Charging Cart	QL488AA
	HP 30-Notebook Managed Charging Cart	QL490AA
	HP Pocket Whiteboard	A0X37AA

Options and Accessories (sold separately and availability may vary by country)

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